Industrial Standardization

and Commercial Standards Monthly

September

See Article on Page 201

1938

Standards For Your Company

A SURVEY by the United States Chamber of Commerce shows 179 out of a total of 330 trade associations engaged in standardization activities. This work is being done by the trade association for its company members because STANDARDIZATION PAYS —

A company manufacturing motor trucks saved $20,000 in one year through standardization of the grinding wheels used in manufacture.

A concern using twenty-four different kinds of metal cleaners at an average total cost of $100,000 a year reduced the variety to four kinds and cut the cost in half.

A manufacturer was able to guarantee 50 weeks work to all hourly and piecework employees in his lamp department as a result of standardization.

A company by standardizing drawing forms, steel filing cabinets, etc., was able to greatly increase its operating efficiency and cut down overhead.

Standards enabled a chemical manufacturer to reduce his range of tool steels by 80%, and in place of 100 grades of lubricants to stock 10.

It enabled a power company to diminish the sizes and types of cable stocked from an uneconomical 500 to 134.

STANDARDIZATION PAYS. By focusing on essentials, it helps to eliminate the need for expensive, high pressure salesmanship. By concentrating on fewer lines it allows more thought and energy to be put into designs that will be efficient and economical. What it means to the customer in terms of price, satisfaction, and convenience is still another story.

Standards must, however, be kept in line with changing conditions. The standards of the Chinese became frozen and hindered progress rather than helping it. Standardization means not to stand still but to move forward together. In modern industry where the margin of profit is so thin that the correct selection, use, and purchasing of materials alone may mean the difference between profit and loss, STANDARDIZATION PAYS.

Through the American Standards Association as national clearing-house, the work of trade associations, technical societies, and other independent groups is being welded together into a consistent set of national standards, in the development of which every interested group has a part.

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This Issue

Our Front Cover: A tool maker checking his work in the Scientific Instruments Department of the Bausch & Lomb Optical Company.

How the Bausch & Lomb Optical Company Works Out Its Standardization Program. By A. W. Anderson 201

Where to Start Company Standardization. By John Gaillard 209

How Three Organizations Certify Consumer Goods. By Lincoln H. Clark 211

A.H.E.A. Honors Dr. P. G. Agnew for Work on Consumer Program 213

National Fire Protection Association Shows Progress in Standards Activities 214

Legal Decisions on Standardization Cited in New Book on Trade Associations 216

Grounding Committee Hears Reasons Why Pipe Lines Cause Trouble 217

How a Uniform Marking System Identifies Valves & Fittings. By John J. Harman 218

Cooperatives to Develop Uniform Informative Label. 210
Standardization Helps Engineering Advance 210
Revise Simplified Practice for Concrete Building Units 210
Air Photography Points Need for Camera Standards 213
Standard Bleed Borders Would Save for Advertisers. 216
A.S.T.M. Consistency Symposium Considers Standardization 222
A.S.T.M. Symposium Analyzes Coal Tests 223
ASA Committee Studies Standards for Uniform Auto Inspection 224
Heat Exchange Institute Issues Standards 224
British Standards for Coal Available from ASA ... 225
Uniform Factory Inspection Is Purpose of New Manual 225
Bemis Industries Ask ASA for Modular Design Standards 225
National Safety Congress Holds Silver Jubilee 226
American Standard Coal Classification Adopted by Canadian Committee 226
New Series of Papers Will Describe National Bureau of Standards' Research on Building Materials ... 226
What Name for Heat Value? 227
Radio Receiving Appliances Standard Now Available 227
Canadian Association Issues Cable Standard 227

ASA

Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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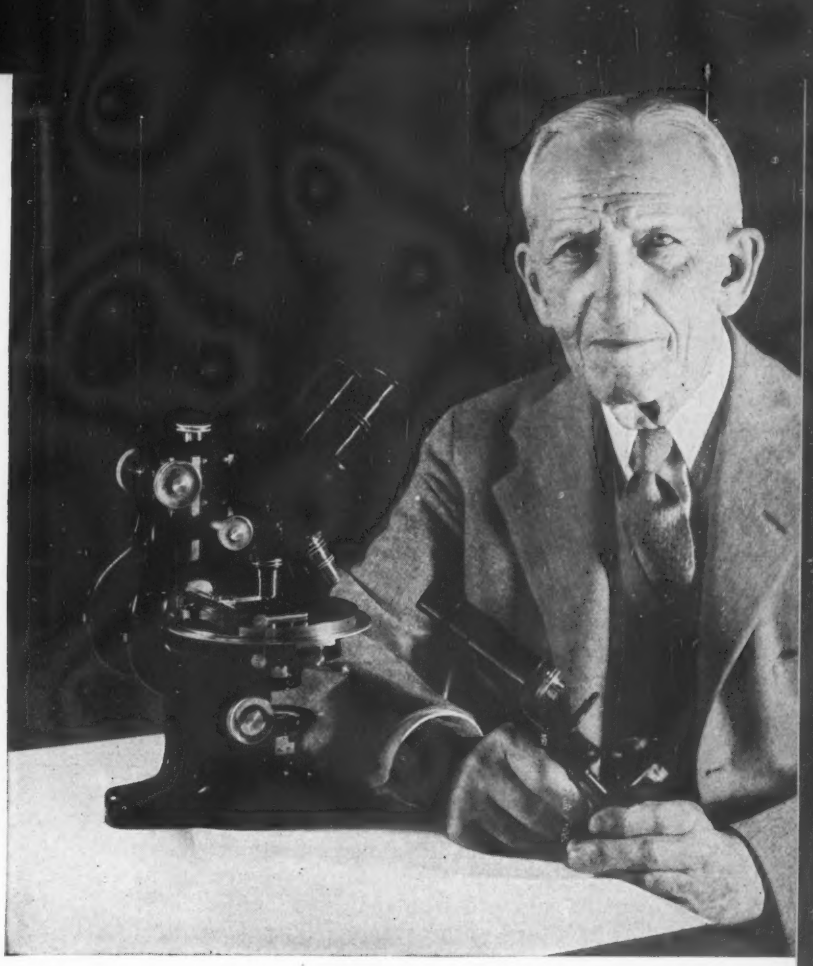


Mr. Edward Bausch, active in early efforts to standardize microscope screw threads, shows the difference between the first microscope he built in 1872 (which he is holding) and one of the modern instruments. Regardless of differences in appearance, the objectives of both are interchangeable.

How the Bausch & Lomb Optical Company Works Out Its Standardization Program

by

A. W. Anderson

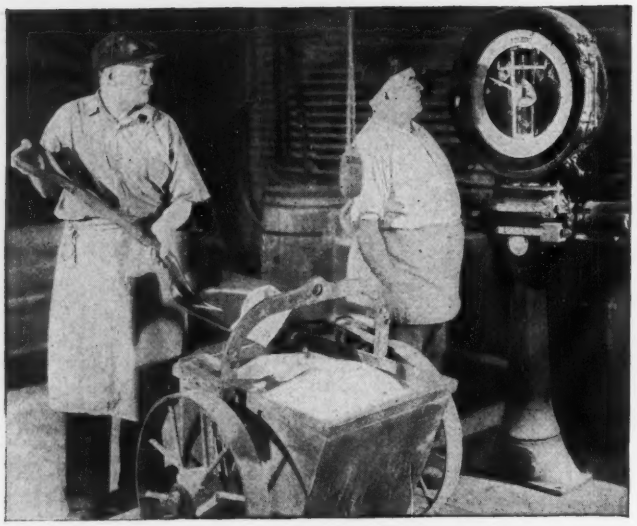
Bausch & Lomb Optical Company Rochester, N. Y.

ABOUT two and one-half years ago there was set up at Bausch & Lomb Optical Company a committee to study Material Standards Specifications.

This was by no means the company's first activity in standardization. It was, however, a recognition that standardization, particularly in purchasing materials, should receive more consideration.

The new committee was introduced to prepare material purchase specifications, to devise a simple code for labeling and identifying the specifications, and to select additional materials for which specifications were to be written. The committee was also to review and analyze the specifications as written, indicate those materials requiring testing, act on the acceptance of the final specifications, and submit them to the management.

The committee has a permanent membership of four, augmented by other members who are specialists in their lines. The permanent group is made up of a chairman who is the assistant to the Works Manager, the Purchasing Agent, the Head Research Chemist, and a representative of the Engineering Department. The permanent committee is supplemented by subcommittees, the members of which act in an advisory capacity in the gather-



Silica sand used by the Bausch & Lomb Company in manufacturing optical glass must not have more than .017 per cent of iron oxide or the transmission quality of the glass will be injured. Special requirements such as this make it necessary for Bausch & Lomb to develop its own specifications and methods of test for some of its materials.

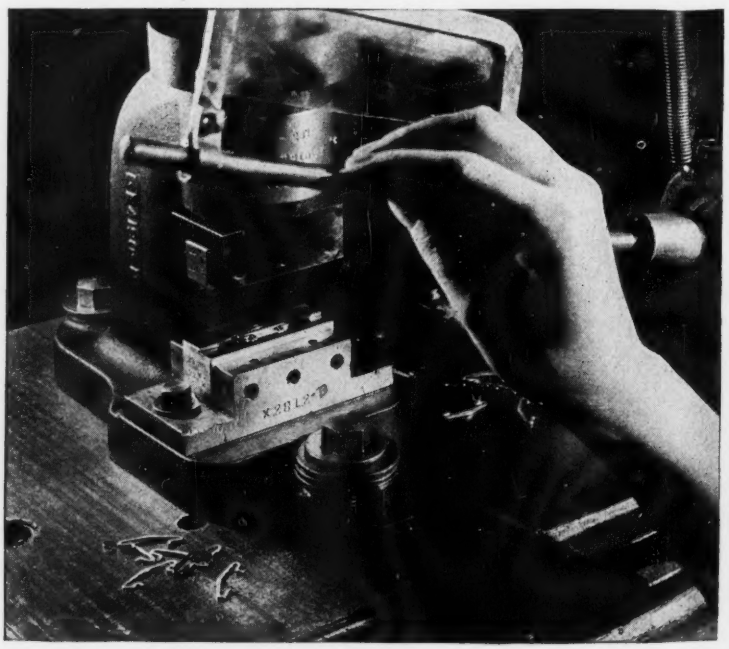
ing of material for the specifications. These subcommittees are appointed by the permanent committee and are dissolved when the specific job for which they were organized is completed. Details of editing the specifications are left to two members of the Materials Standards Department, who are permanently assigned to this work.

At the present time, the committee is actively engaged in reviewing standards, considering the replacement of materials reported to be giving trouble in the factory, and looking out for the use of new materials.

Bausch & Lomb supports the national standardization work through membership in the American Standards Association, and is also a member of other national organizations with standardization programs, such as the American Society for Testing Materials, the American Society of Mechanical Engineers, etc.

Bausch & Lomb has found, as we know many other local companies also have found, that the writing of material purchase specifications is of great aid to the Purchasing Department.

Materials which Bausch & Lomb has to date investigated are covered by two types of specifications—Material Purchase Specifications, and Ap-



"Sub-presses" use removable die blocks in repetitive processes, making it possible to keep standard tool blanks in stock for quick replacements.

proved Material Forms. All Material Purchase Specifications follow the same general outline:

(*a*) Scope
(*b*) A general paragraph describing the material and how it is to be used.
(*c*) Chemical properties
(*d*) Physical properties
(*e*) Material and manufacture
(*f*) Finish
(*g*) Size
(*h*) Tolerances
(*i*) Packing
(*j*) Marking and labeling
(*k*) Testing and inspection
(*l*) Rejection

In the case of metals, the items of temper or cold working and annealing are also covered.

Material Purchase Specifications are written for all materials which have, in the past, caused considerable difficulty during fabrication or for those materials which have some particular characteristic that is peculiar to the use the material is put to at Bausch & Lomb.

An example of this is the specification for silica sand used in the manufacture of optical glass in which the FE_2O_3 plays a most important part. The iron oxide must never exceed .017 per cent, and less than this amount would be even more satisfactory because the iron has a marked effect upon the transmission qualities of optical glass. The optical designer is always interested in glasses of the highest percentage of transmission. Because this material is peculiar to Bausch & Lomb, there has also been a need for us to develop the testing specification so that we might accurately determine the iron oxide content of this material.

The second method of covering these materials is what we classify as an Approved Material Form. These Approved Material Forms all follow a standard outline covering:

(*a*) name of the material
(*b*) what departments use it and for what purpose
(*c*) lists of the suppliers and the particular trade names by which they supply the material
(*d*) the characteristics of the material, and
(*e*) the frequency and quantities of purchase.

These Approved Material Forms are not sent to the suppliers but are used by the Purchasing Department as its guide for purchasing that particular material. Approved material forms are always written for materials where no particular outstanding properties are necessary, but where it is desirable to receive uniform material through always buying the same material from the same suppliers.

Both the Material Purchasing Specifications and the Approved Material Forms have been coded so as to tie in with the material specifications code.

When materials are received from the suppliers they are tested in accordance with our own stand-

Four permanent members and a secretary make up a committee on Material Standards Specifications, center of Bausch & Lomb's standardization program. When specific problems are under discussion specialists in the subject are brought in to act as supplementary subcommittees. Members of the permanent committee, seated around the table from left to right, are: Theodore Zak, Head Research Chemist; A. W. Anderson (author of this article) representative of the Engineering Department; Arthur Ennis, Assistant to the Works Manager; Chester Kirchmaier, Purchasing Agent. James Thetford, secretary for the committee, is standing.

This paper was given by Mr. Anderson before the Industrial Standards Group of the Rochester Industrial Management Council. The Industrial Standards Group was organized recently under the auspices of the Rochester Chamber of Commerce to bring together engineers and executives to discuss problems of standardization and particularly the organization of standardization work in individual companies.

Checking Lenses

After a 100 per cent inspection by the factory organization, a control inspection follows.

ard tests. These standard tests follow one of four types:

1. Standard A.S.T.M. test
2. Modified A.S.T.M. tests to suit our own needs
3. Generally accepted trade practices and their modifications, and
4. Tests developed by Bausch & Lomb. This last, as previously mentioned, as in the case of silica sand.

This presents some of the activities of the Bausch & Lomb Committee on Standards.

Now, as to inspection standards. When we, as manufacturers, reproduce an article hundreds and possibly thousands of times, we want to be assured that these reproductions are all alike and that they meet a standard of perfection, at least within certain limits. Different types of product require different approach. Bausch & Lomb, like all Gaul, is divided in three parts. We have our Lens Plant, our Spectacle Frame Division, and our very special work of making and assembling scientific instruments.

By careful study of the customer's lens requirements and our lens manufacturing facilities we have been able to arrive at group tolerances for these lenses, and to pack them accordingly. In this way, the customer is assured of a product within the limits of variation which are suitable for him.

In the same way, spectacle frames must meet certain requirements. Although I know of no greater variation than that represented in facial characteristics of people, it has been found that, despite all sorts of noses, ears, and eyes, there is still a possibility of setting up frame standards. Standard requirements, therefore, must first be established before standards of manufacturers can be set up or followed.

The Manufacturing Division subject parts all along the line to comparison to standard specifications. Lenses and frames are subjected to a 10 per cent final lot inspection and if this fraction does not come up to standard, the whole lot is referred to the factory for reworking or reexamination.

In the scientific instrument line, the drawings and layouts represent the standards set up. In this branch of the manufacture, a 100 per cent final inspection of the finished product is required. A standard form of inspection specifications is shown here. All such specifications follow a similar arrangement.

It is in the Manufacturing Division that most standardization has been done and here its costs are justified by savings in labor and by other

Our Front Cover

In the scientific instruments department of the Bausch & Lomb Company the drawings and layouts represent the standards to which the work must comply. Here a tool maker is checking his work.

economies, such as in time, service, convenience, low inventories, less spoilage, fewer parts, fewer complaints, and more satisfied customers. We have, as I presume in all concerns, operation layouts codified with numbers for the different operations. Such a layout is a concise manual of directions for the operator with complete information as to how he should proceed.

In our repetitive operations, particularly in the Frame Manufacturing Division, we have standardized on tools to the extent that we keep tool blanks in stock. In the manufacture of spectacle frames these stock tool blanks are partially finished tools that are used in what are called "subpresses." For instance, the small die that is used in the first striking operation for the endpiece, of which we make millions in a year's time, is a typical example. The tools wear out and must be replaced. Tool blanks are available, and the time required to sink a particular style of endpiece design or other similar part in this tool is very short compared with the time required to make up the complete tool.

Subpresses themselves are needed in rather large quantities each year, and they are made in quantities of 50 or so at a time. A new subpress can, therefore, be arranged for operation in a very short time.

Bausch & Lomb started the manufacture of instruments before the existence of the standards of the American Society of Mechanical Engineers and consequently had a large investment in taps and dies which were standard with our plant only. In order to reap the benefits of interchangeability in our plant, these Bausch & Lomb screw threads have been continued until the present time. In fact, the time may never come when we can conveniently discard our own standards completely in order to take advantage of existing universal standards. We have, however, made overtures to adapt our manufacturing to existing standards wherever it is practicable. This is particularly true with respect to instruments which are new creations and which, therefore, have little or no interchangeability with the items that have been standard with us for a considerable length of time.

The source of most all standards can be traced to the drawing board. It is here that existing standards are specified and new standards are created for later use in actual standard manufacturing procedure. We have at the present time about 4,000 different catalogued instruments, each made up of from one to over a hundred parts. We maintain a very elaborate list of interchangable parts, exclusive of stock screws, pins, etc. This list of about 9,000 parts must be accurately kept up so as to insure convenient production quantities and profitable manufacture.

Checking contours with standards at from 10 to 100 magnifications.

A routine procedure that is standardized is that of making changes in our specifications. The cost of making changes is a factor of great concern, and if any one has ideas where we could eliminate changes and still keep sales people, designers, and manufacturers truly happy, to say nothing of our boss, the public, we would like to hear from them. Our system is, in short, one of getting a meeting of the minds of the several departments involved, with an approval signature so that no change is made without the proper authority. Of course, changes are of all sorts and degrees and it rests with the Specifications Department to determine how far to go in order to get the necessary approval of changes.

The Specifications Department has taken steps toward adopting material standards. For example, let me cite one case, that of the use of brass tubing. Like Topsy, our list of so-called standard tube sizes had grown to a number over 500. Some seven years ago, one man's time for several months was given over to the analysis of this situation and the work of cutting down the number of sizes. This list was reduced over one-half. The impetus

Assembling field glasses. Here the parts which have previously been checked are brought together and the complete instrument is given a final inspection.

of the work has carried over until finally the list has been further reduced to about 200, and work is constantly being done with a view to having a less and less number of standard sizes.

The Specifications Department has set up a standard list of duties for draftsmen, ranging from the apprentice up to the "A" class of designer. In the same way there has been a set of some seventeen rules for use by the checkers making a quick check on drawings and in addition there is a series of some 30 additional points describing in detail the routine the checkers should follow. The Drafting Room, of course, has many other standards which are probably peculiar to Bausch & Lomb and would make material for a complete detailed discussion.

Objectives Interchangeable

Standardization is not a new factor in industry as we know it. Take, for instance, the microscopes that you can purchase today, modern in every respect. These will accommodate an objective made more than 75 years ago. A standard screw thread set up by the Royal Microscopical Society, known as the Society Thread, has been standard for a long time. At a meeting of the Royal Microscopical Society, November 11, 1857, it was resolved that a report recommending a thread, the gages for which were then procurable from a manufacturer by the name of Whitworth, be adopted as a standard. Three principal firms in London had agreed to adopt the proposed gages.

This thread was originally set up to be a 54 deg thread slightly rounded at top and bottom, with thirty-six threads to the inch. It was later amended to read 55 deg, with one-sixth of the depth rounded on both top and bottom, but still remaining 36 threads to the inch. This became the Whitworth standard form.

Bausch & Lomb became associated with the microscope manufacturers very early. It was in 1884 that the American Microscopical Society appointed Mr. Edward Bausch and Professor William A. Rogers on a committee to correspond with the Royal Microscopical Society with a view to perfecting the Standard Society Screw or adopting another standard, and perfecting methods by which the screws of all makes might be truly uniform. Although this matter was earnestly considered at the time by the Royal Microscopical Society, the mechanical difficulties were so great that the improvements suggested were abandoned.

A report was read June 17, 1896. It was pointed out that the so-called standard screw thread of the Royal Microscopical Society had been but an imperfect standard, and had not ensured that interchangeability which it originally promised. Investigation followed. It was found that there was some alteration in the size during the heat treatment of the taps, and allowance had been given for this variation and also for wear. New tolerances were set up and limits of allowable variation were defined.

In 1911 a committee was appointed for obtaining and testing additional tools. In 1915 it was reported that standard gages of the Society had been deposited at the National Physical Laboratory, but

the suitability of the tools supplied by the Society was questioned, and in 1923 a committee was appointed to investigate. This committee reported in 1924, its report leading to elimination of the need for issuing sizing tools. Modern manufacturing methods permitted makers of microscopes to conform to the Royal Microscopical Society specifications.

Bausch & Lomb has always been active in promoting manufacturing specifications leading to these modern methods, which have eliminated the use of sizing tools. Other items on which Bausch & Lomb has followed the recommendations of standard procedure are in respect to the nosepieces, eyepieces, and substage equipment of microscopes.

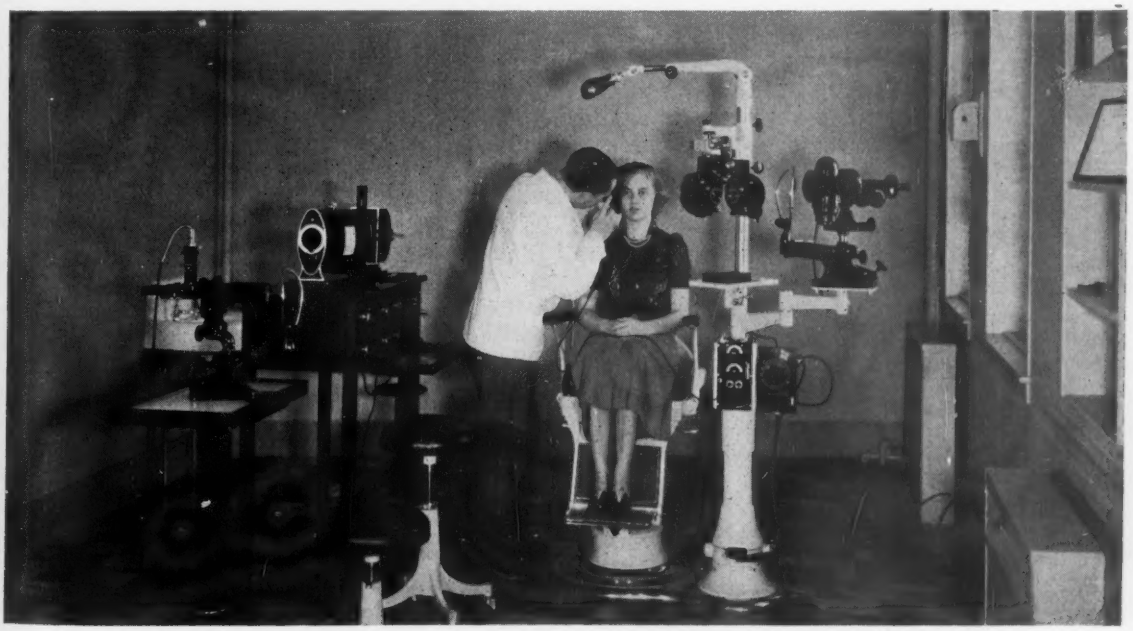
Although Bausch & Lomb is the only manufacturer of optical glass in this country, attempts are being made to standardize on the classification of types of glasses. We make about 100 different types of glass, and our Scientific Bureau has a coding which, over a long period of years, is standard with them. The Manufacturing Division also has a code which they find convenient to use. We find that the Army and Navy, who are substantial users of our optical glass, have their own designation.

Bausch & Lomb has been actively engaged with the Army and Navy Departments in an endeavor to standardize glass groups and the designations of various types of optical glass, as well as to standardize on the type of glass used by the Army and Navy. A study initiated by Bausch & Lomb is now being made of the classification of glasses among foreign manufacturers with a view to establishing American standards. Inasmuch as the foreign classification is simple and rather widely used, the proposed standard designation system will possibly be based on it.

Manufacturers Want Standards

With the variety of styles and types of spectacle frames and mountings now on the market, it is not surprising to note that manufacturers have felt the urge of standardization. There are standard eye shapes and sizes, standard temple joints, and standard bridge sizes. The quality designations indicating the amount of rare metal that goes into the metal parts are standardized, as is the marking of such product. Bausch & Lomb is actively engaged in the organization promoting such standards. This organization, the Optical Manufacturers Association, is supported by subscriptions from all reputable optical manufacturers.

A study was made recently and a report published on the determination of the sizes of fine abrasives. This study was made under the auspices of the Bausch & Lomb Optical Company Fellowship at Mellon Institute. The report pointed out that although the microscope is relied upon as the standard control instrument in the abrasive field, the measurements made possible by it are not universally used, and the assignment of abrasive grade numbers has been a rather arbitrary setup. The National Bureau of Standards has established



Bausch & Lomb equipment as used in eye examinations.

certain standards for the coarser sizes up to 300 mesh, and for some time the Bausch & Lomb Optical Company has contended that this method should also be used for the finer grades. Other manufacturers have been reluctant to give up their old designations and we have shared in this feeling inasmuch as our present designations are just as familiar but just as arbitrary as those of our competitors. We, however, are very anxious to standardize and are willing to forego retaining our old setup.

Needs Coordination

The development of new product and improvement of the present product is an activity requiring considerable coordination. As pointed out, the variety of our product is such that different individuals and groups of individuals must be lined up to contribute their share to the many steps involved in developing and finally producing the product. A chart has been used as a standard guide to great advantage. It is not a set of rules that is set up to be followed 100 per cent, but is merely to be used as a guide with good judgment always in the vanguard.

Not only have we a standard procedure for developing products, but our product is also used in standardizing. A goodly number of the products we make represent the results of working with organizations promoting standards of many types. For example, the most recent has been a Dust Counter, an instrument for determining the amount of dust within certain particle size limits, suspended in a certain volume of air. Some standards have been arrived at in cooperation with several authorities on the subject. Silicosis is a dread disease and one upon which many law suits have been based. Such a standard instrument will aid in setting up standards for room conditions where such conditions should be known.

Another instrument is the Glossmeter recently developed in connection with the Institute of Paper Chemistry. This instrument compares paper product surfaces with known standards.

Many of our Ophthalmic Instruments used by optometrists, opticians, and oculists are used for measuring, using an accepted or prescribed standard.

Many other instruments manufactured by Bausch & Lomb serve similar purposes, such as the Refractometer, Saccharimeter, Photometer, etc.

In the history of Bausch & Lomb, some attention has been given to the matter of trade marks. Several different types have been registered in the U.S. Patent Office, but it was not until a few years ago that we found, again due to our variety of products, that we had quite a variety of sizes and styles of trade marks. The Engineering Department took the responsibility for establishing certain accepted forms based essentially on one trade mark, and a standard has thus been set up.

At one time an item of annoyance was that of containers for lenses and frames. It was found that no accepted standard had been applied and consequently we were scrapping a lot of what seemed to be reasonably good containers because the next new style of product needed a new container. This was taken in hand by the Engineering Department, and now a very definite routine is followed for the adoption of new containers.

Some fifteen years ago when the mechanical tabulating system was installed at the Bausch & Lomb plant, it was necessary to assign a code number for each catalog numbered product. Catalog numbers were picked from the thin air and we have had all sorts. In order to develop expeditiously a report on cost of sales, it was necessary to properly code each item. We then had a double system: a catalog number used by the Sales and Specifications Departments, and a coding system used by the Tabulating and Cost and Budget Departments. Other departments tied in as best they could. In 1930 we threw overboard all our old catalog designations and adopted one which was a cross between the active number and the code. Now the catalog number is the code. It was the hardest to get the older people in the organization to change over because they were familiar with the product and it was very difficult for them, not so much to learn the new, but to unlearn the old.

Another bit of standardization was for booklets giving directions for use. These had as many types of approaches as there are women's hats and some just as ill fitting. The matter of standardization was taken in hand by the Engineering Department and we have now a matter of half a dozen sizes with a distinctive jacket design, so that the printed literature is always readily identified as directions for use.

Our catalogs have received the same treatment and, although sales literature has been of many sizes and types, we are gradually gravitating to the standard 8½ x 11 in. size. This is being supplemented in some cases by a small pocket-size looseleaf booklet containing a price list.

Operates Smoothly

In closing I want to call attention again to the term standardization—I like to think of standardization as coordination, close coordination leading to a smooth operating machinery all along the line. Our own efforts are best recorded by specific, complete, and clear-cut orders and instructions, with appropriate tolerances for the inevitable shortcomings and errors.

Bausch & Lomb believes in standardization.

Where to Start Company Standardization[1]

by

John Gaillard

Mechanical Engineer, American Standards Association; Vice-President in charge of Standardization, Society for the Advancement of Management

STANDARDIZATION, broadly viewed, has for its purpose to coordinate the various functions of an entire business organization—from research and development at one end, to sales and advertising at the other.

In organizing standardization work in a company, however, it is necessary to begin by focusing on one definite part of the organization. What part that should be depends on the conditions in each individual case.

In a manufacturing concern, for instance, and particularly one in the mechanical or related industries, the most promising starting point is usually the engineering department. Here, the decisions are taken as to what the performance and appearance of the product should be, and how it should be made. Assume that we start standardization here. The relation of the Engineering Department to the other main functions should then be kept in mind constantly, if standardization is to establish complete harmony within the Production Group.

The five main functions of the Production Group in a company of the type mentioned are:

Design
Planning
Purchasing
Manufacturing
Inspection and testing

In the listing given below, each of these functions and their subdivisions is followed by a symbol which may be helpful in establishing a classification of company standards.

Design (DE)
Functional design (DEF)
Production design (DEP)

Planning (PL)
Routing (PLR)
Methods (PLM)
Time allowances (PLT)

Purchasing (PU)
Materials (PUM)
Component Parts (PUC)
Manufacturing equipment and tools (PUE)
Manufacturing accessories (PUA)

Manufacturing (MF)
Components (MFC)
Rough shaping (MFCR)
Finish shaping (MFCF)
Treating (MFCT)
Assembly of Components (MFA)

Inspection and Testing (IT)
Materials (ITM)
Components (ITC)
Product (ITP)

The following remarks may explain certain features of this set-up. Production Design, sometimes called Tool Engineering, is concerned with the way in which the product is manufactured, contrasting with Functional Design, which applies exclusively to the performance of the product. The two types of design cannot be entirely divorced. On the contrary, the most perfect design results from their harmonious blending.

Similarly, in Planning, there is a close relationship between Methods (applying to Operations and Processes) as laid down on instruction sheets, and Time Allowances. However, independent Time Allowance standards come in, for example, where times for unit operations and processes, down to elementary subdivisions, are required for the building up of production schedules before manufacturing of a new product is started.

Under Purchasing, mention is made of Manufacturing Accessories. By this are meant items that neither go into the product, nor come under

[1]Reprinted from the *News Bulletin* of the Society for the Advancement of Management, June.

Equipment and Tools. Examples are lubricants and molding sand.

Treating, a subdivision of Manufacturing, includes all operations and processes not meant to *shape* components of the product—either roughly, as by casting, or smoothly, as by grinding. Examples of Treating are: heat treatment of metals, painting, varnishing, powdering, etc.

Inspection and Testing have been combined, first because they apply to materials and components as well as the finished product, and second, because essentially there is no difference between the two. In practice, Inspection connotes primarily a visual examination possibly supplemented by other simple forms of examination, such as the tapping of a casting or carwheel. Testing connotes a more elaborate examination, for example by means of a machine especially built for the purpose—and also the fact that the object under examination is made to show what it can do, as in a tensile test of a steel bar, the test run of an engine, or the testing of a casting under hydraulic pressure, contrasting with the simple "inspection" by tapping it with a hammer.

Cooperatives to Develop Uniform Informative Label

A uniform informative label for all goods sold by cooperatives is now being planned by the leading cooperative wholesales of the country, according to a statement by Theodore Castner, buyer for the Eastern Cooperative Wholesale, reported recently in the *New York Times*.

"While it is the intention of the co-op wholesales to label all merchandise they handle, the start will be made with grocery products," Mr. Castner said.

"For example, the Eastern Cooperative Wholesale handles about 600 grocery products, half of which are labeled and half of which are unlabeled. We are planning on a uniform design of label, which will serve to standardize co-op quality and make possible additional savings in the merchandise purchases made by the wholesales. The plan provides that each label include an informative description of the character of the product, including all available information concerning quality and grade and other information of use to the ultimate consumer."

Mr. Castner said the labels would give the government grade of the product "if it is significant." He indicated that on some items the data given would be of higher standard than the government grades.

Use of the label on products other than foodstuffs, he added, would depend on the nature of the item. The Eastern wholesale, the only one in the East, handles a large volume of business in electrical appliances and automotive supplies.

Mr. Castner said the volume of the Eastern organization in the first six months of this year was $341,783. Sales for all of 1937 were $540,000.

Standardization Helps Engineering Advance

"Engineering as such is looked upon by many people as something that is narrow, restricted and understood only by a very few people, who have no sense of the drama of life. One has only to think of the vast strides that have been made in our civilization by engineering and industry to recognize in it the greatest drama that does exist in life. Without the fundamental standards that have been set up by research and engineering, many of the things that we enjoy and many of the things that have made life worth while, in fact have served to save life, would be missing from our organized society."—*George W. Elliott, Past-President, National Fire Protection Association.*

Revise Simplified Practice For Concrete Building Units

Adding four 11¾ in. units to the schedule, a revision of Simplified Practice Recommendation R32-32, Concrete Building Units, has been given the required degree of acceptance by the industry and became effective August 1, announces the Division of Simplified Practice, National Bureau of Standards.

This recommendation lists sizes and tolerances for load and nonload bearing block and tile, and for face and common concrete brick.

Until printed copies are available, mimeographed copies of this Simplified Practice Recommendation may be obtained without charge from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

How Three Organizations Certify Consumer Goods[1]

by

Lincoln H. Clark

School of Business
University of Chicago

THE movement for the certification of consumers' goods lags far behind that of producers' goods. However, there is some activity for certification by a few progressive manufacturers, trade associations, retailers, government agencies and consumer organizations.

Four aspects of certification merit particular attention for the consumer. First is the certifier—who he is, what he does, how he is financed, and whether or not he finances the plan. Second are the standards—what they are, who developed them and why. Third, the test—who does the testing, and what methods are followed, and how often are the tests made? The fourth principal consideration is the "evidence of certification" which is most commonly a seal, label, tag or certificate. This is distinct from a trade-mark or brand name for data concerning the standards, testing methods, and claims are given in it.

The plans of Gimbel's, *Good Housekeeping*, and the National Bureau of Standards, are selected to illustrate the three general types and merits of certification plans, from the consumer's point of view.

Gimbels Tests

Up to October 7, 1937, over 180 articles had been tested and certified by Gimbel Brothers of Philadelphia and 200 more are scheduled for immediate certification. It is estimated that fully fifty per cent of the entire stock of the store will eventually be certified. One of the problems of the consumer is the determination of the relative desirability of products of lower or higher grade than the certified products. Obviously, the tendency has been to certify products of better quality, or at any rate, of higher price.

Gimbel's Bureau of Standards has set up definite quality standards for each product embraced in its certification plan. Samples chosen by recognized procedures are continuously tested by the Industrial By-Products and Research Corporation. Results of the sampling and testing, and the standards by which the products are judged are compiled into reports by this Research Corporation. Copies of these reports are available in the store from the several departments that sell certified products.

The labels on certified products tell the consumer "What It Is Made Of," "How It Will Wear," and "How To Make It Last Longer." The certified goods also are advertised in newspapers and over the radio. Most certifiers claim that the labels "will give consumers all the facts to help consumers save time and money."

Good Housekeeping Certifies

The certification activities of *Good Housekeeping* through its Institute and Bureau have brought forth considerable comment from consumers and writers in the field of consumer buying. Good Housekeeping Institute tests household appliances and devices, laundry soaps, and household cleaners. The Good Housekeeping Bureau tests cosmetics and toilet preparations, food products, and certain pharmaceutical supplies. Both the Institute and Bureau grant permission to manufacturers to use their seals on any products which receive their approval after testing.

There is considerable difference of opinion between *Good Housekeeping* and some consumers concerning the extent to which the magazine through its Bureau and Institute represents the consumers' interest. *Good Housekeeping* states that the various types of products mentioned above must be tested and approved before they may be advertised. No advertising is accepted for a product which fails to pass the tests upon which the Institute or Bureau bases its final decision. In the event of non-approval, a complete report is made to the manufacturer, giving specific recommendations for improvement or alteration of the

[1]Abstract of an article published in the *News Bulletin* of the School of Business of the University of Chicago. The Bulletin gives a digest of business research completed or in progress by the staff and students of the School.

product. If the manufacturer adopts the recommendations, he may submit the product for a new test.

According to *Good Housekeeping's* statements, about 30 per cent of the products submitted for testing are disapproved. Undoubtedly this shows that some of the shoddy merchandise submitted by quacks and manufacturers unable to advertise nationally is rejected. But the consumer is not told what products are turned down or how the products are tested, or anything specific about the standards by which the products are tested. Approvals like those granted by *Good Housekeeping* would likely be regarded as worth much more if they are known to be on generally accepted standards.

Testing Free

Good Housekeeping Institute and Good Housekeeping Bureau, financed by *Good Housekeeping Magazine*, determine the conformity or non-conformity of products with respect to the standards which they prescribe. They do all the testing free of charge for manufacturers. They do not make tests of products submitted by retailers or consumers, or for manufacturers whose products are not in national distribution.

Manufacturers are licensed to use the Institute seal for one year only and the Bureau seal for two years. At the end of the period an application must be made for a renewal of the license. Manufacturers must re-submit their products for testing if they say that the products have been changed in any way since the original granting of permission to use the seal. It is clearly stated on the seals that the product has been tested and approved and the seller is identified by a serial number. The general public, upon application, may obtain lists of the approved products, their manufacturers and serial numbers.

The Good Housekeeping plan has been criticized because no effort is ever made to grade tested products and thus establish relative values. The same criticism would also apply to all private plans and even to most of the state-certification plans. Of greater significance is the problem with which the magazine is faced of benefiting its advertisers without antagonizing its subscribers (consumers). Consumers may expect to benefit by Good Housekeeping's activities only to the extent that there is a community of interest between its policies and the wants of consumers.

The certification plan of the National Bureau of Standards consists of the compilation and distribution of lists of sources of supply of commodities covered by certain selected federal specifications and commercial standards. These lists contain names of firms who have indicated their willingness to certify to purchasers, upon request, that the materials supplied by them actually comply with the standards promulgated by the Bureau of Standards. This certification plan is for "public purchasers," that is, purchasers for the Federal, State, municipal government, and institutional agencies who are spending money collected from the public in the form of taxes. Most of the specifications are for producers' or intermediate consumers' goods. Those applying to ultimate consumers' goods are of little direct assistance to the non-technical consumer. The government does not issue any statements regarding current brands which meet its specifications. This plan, therefore, benefits the consumer only indirectly by the standardization of quality resulting from the setting up of such standards.

To aid the non-technical consumer, the Bureau has developed a labeling plan which is associated with its certification plan. In accordance with this "self-identifying, quality-guaranteeing labeling procedure," a firm desirous of bringing to the attention of consumers whatever commodities it is willing to guarantee as complying with the requirements of nationally recognized specifications or standards, places labels on the individual commodities or their containers. These labels identify both the specification and the seller who is responsible for the guarantee. The Department of Commerce does not assume any responsibility for the quality or quantity of the commodity, and no inference to the contrary may be made on the label.

The Bureau has authorized the application of the labeling plan for ultimate consumers' goods to 539 of the 1100 specifications developed by the Federal Specifications Board. The plan also applies to Commercial Standards, and to Simplified Practice Recommendations, both of which have been promulgated by the Department of Commerce.

Government Standards

Technical committees formulate Federal specifications subject to final approval by the Federal Specifications Executive Committee. They receive criticisms and suggestions of tentative specifications from interested and informed commercial and industrial concerns and from engineering and technical societies. In turn they submit them to all departments of the government before final adoption.

Commercial Standards are recorded and issued but not originated by the Department of Commerce. They are worked out by producers, distributors, and consumers in consultation with the Department of Commerce. The labeling plan may be adapted to any of the Commercial Standards, including specifications for different grades. The

names of these grades are of doubtful value as guides to the buyer.

The Division of Simplified Practice of the Department of Commerce, like the Division of Commercial Standards, does not originate or promulgate recommendations. It acts only as a coordinator of the efforts to develop recommendations initiated by industries. The procedure for certifying compliance to Simplified Practice Recommendations is exactly the same as that required for Commercial Standards or the selected Federal Specifications.

The Bureau of Standards is not authorized to test products of individual manufacturers for conformity with the Commercial Standards or Federal Specifications, nor does it check upon the use of the Simplified Practice Recommendations. Responsibility for all testing and checking rests with the producers.

Though they are subject to abuse, such devices as certification plans when carefully administered will facilitate a change in our competitive society from the doctrine of "Caveat Emptor" to "Noscat Emptor."

A.H.E.A. Honors Dr. P. G. Agnew For Work on Consumer Program

HONORING Dr. P. G. Agnew, secretary of the American Standards Association, for his part in organizing work on standards for consumer goods, the American Home Economics Association elected him honorary member at its meeting recently in Pittsburgh.

The resolution recommending the Association's action said:

"Whereas, Dr. P. G. Agnew, secretary of the American Standards Association, was the first to recognize the potential influences of the American Home Economics Association as a representative of the household consumer in the standardization program and similar movements and helped to clear the way for the Association to act with other organizations in this capacity, therefore be it recommended that Dr. Agnew be made an honorary member of the American Home Economics Association."

In transmitting the Association's action to Dr. Agnew, Lucy Rathbone, Recording Secretary, said, "The American Home Economics Association wishes for you and the American Standards Association continued success in your standardization program for the benefit of consumers."

The American Home Economics Association became a member of the American Standards Association in 1929, because it believed that the ASA was the type of organization best suited to the development of standards for consumer goods. Since that time, the American Standards Association has organized the Advisory Committee on Ultimate Consumer Goods which brings together retailers and consumers to make recommendations on consumer standards problems.

The A.H.E.A. has taken an active part in the work of representative technical committees developing standards. It has the administrative leadership for the Sectional Committee on Standardization of Sizes of Children's Garments, and is represented on seven other committees, including the committee on Minimum Requirements for Plumbing and Standardization of Plumbing Equipment, Standards and Specifications for Refrigerators, and the Ventilation Code.

Through its representation on the ASA Standards Council, which makes final decisions on approval of standards under the procedure of the ASA, the American Home Economics Association also has a voice in the development of all American Standards.

Air Photography Points Need For Camera Standards

To insure that photographs taken from the air will be of a quality and character that will be satisfactory, not only for present needs, but also for other purposes that may develop, the American Society of Photogrammetry has appointed a Committee on Precision Cameras to formulate camera specifications. Government agencies interested in crop control, soil conservation, large-scale irrigation projects, and installation of hydro-electric plants, particularly, have found it helpful to use such photographs and their needs have greatly accelerated the photographing of large areas of the United States from the air.

An article presenting the results of an investigation in connection with the work of this committee will soon be published in *Photogrammetric Engineering.*

Automatic Sprinklers.—A progress report covering a proposed revision of the NFPA sprinkler rules was presented. The report was accepted and has been published in complete form in the NFPA Proceedings.

The report of the Committee on Hydrants, Valves, and Pipe Fittings discussed work being done to harmonize the hydrant specifications of the NFPA and the American Water Works Association.

Mention was also made of recent developments in the work of the Sectional Committee on Specifications for Cast-Iron Pipe and Special Castings (A21) under the procedure of the American Standards Association.

The Committee on Hazardous Chemicals and Explosives reported that additions to the table of common hazardous chemicals, last issued in 1936, had been accepted by the committee. This new material was prepared in cooperation with the American Chemical Society. The NFPA adopted the recommendations of this committee.

Legal Decisions on Standardization Cited In New Book on Trade Associations

"Standardization today ranks with industrial and commercial research and statistical measurement of business activities as a positive dynamic force in business," say Benjamin S. Kirsh and Harold Roland Shapiro, authors of a new book, *Trade Associations in Law and Business.*

Their chapter on "Standardization by Trade Associations" traces the history of standardization from the time when it was the function of indvidual companies, through the war-time demand for coordination, the organization of the American Engineering Standards Committee (now the American Standards Association), the astonishing demand for standards in the NRA period, and shows how it has been treated in court decisions.

"Legal decisions reveal a clash between the tendency toward uniformity in commodities and trade practices, with the insistence of the law upon the exercise of the individual initiative of the members of the association and those dealing with them," say the authors in summarizing the court actions affecting standardization activities of trade associations. Several cases in which standardization has won out in the courts are cited, among them the *Appalachian Coals* case, in which the Supreme Court declared that the lack of standardization of sizes and misrepresentation of sizes had been found injurious to the coal industry. Again in the *Maple Flooring* case the Supreme Court included standardization with improvement of the product and cooperative advertising as activities admittedly beneficial to the industry and to consumers.

In general, however, the authors sum up the findings as follows:

"The economic benefits accruing to the consuming public from programs of standardization and simplification are the grounds for the legal approval accorded to the movement. In so far as these benefits accrue, and are not counterbalanced by the existence of a plan the necessary effect of which is to artificially affect the sales price, the courts will regard the plan as legal."

Standardization of credits and prices and certification of a product as conforming to a standard are also discussed in this chapter.

Statistical reporting, uniform cost accounting methods, trade relations, credit bureau functions of trade associations, boycotts and defensive combinations, patent interchange and cross-license agreements, uniform basing point systems, collective purchasing functions, and foreign trade functions are other activities of trade associations which are given a chapter each in the new book.

The authors of the book, Benjamin S. Kirsh and Harold Roland Shapiro, both members of the New York Bar, worked together in writing a former book, *The National Industrial Recovery Act: An Analysis.* Mr. Kirsh was formerly Special Assistant to the U. S. District Attorney in New York in the prosecution of Sherman Anti-Trust Act cases. Mr. Shapiro is assistant professor of law in the New York Law School.

The book, *Trade Associations in Law and Business,* by Benjamin S. Kirsh, in collaboration with Harold Roland Shapiro, is published by the Central Book Company, 245 Broadway, New York, at $5.00 per copy.

Standard Bleed Borders Would Save for Advertisers

Standardization of bleed borders, at least among papers in the same field, would save advertisers considerable expense, Walter Buchen, president of the Buchen Company, Chicago agency, told a session of the Associated Business Papers Inc., in February.

Grounding Committee Hears Reasons Why Pipe Lines Cause Trouble

Significant factors contributing to trouble with pipe lines on which electrical current has been grounded have been discovered by a technical committee carrying on field investigations and technical studies for the American Research Committee on Grounding, the committee reported recently. The American Research Committee on Grounding is making a study of the grounding provisions of the National Electrical Code to determine whether changes are necessary, and the findings of the technical committee will be used by the American Research Committee in making its decisions.

There is no evidence that the current may not have contributed to the cause of the trouble in some cases, the technical committee reported, but in none of the cases investigated so far has the trouble been found actually due to alternating current on the water-piping system. On the other hand it was found that important causes of the troubles reported included the tendency of the water to corrode the piping or other metal, the effect of dissimilar metals in the piping system creating galvanic couples, and corrosion of hot-water supply boilers due to abnormally high temperatures.

Six recent field investigations and several sets of laboratory tests were reported on by the technical committee. In one of the six cases investigated no trouble was reported—the investigation having been made because in the construction of a large building the electrical isolation of all protective grounds from the piping systems had been attempted. Electrical tests and inspection showed, however, that such isolation had not been attained.

In the second case reported, the complaint was of leaky water-pipe joints, and the trouble was apparently due to a combination of high water pressure and poor workmanship in the original installation.

In another case where the complaint was of a failure of boiler tubes, steady readings of small direct current were obtained at the boiler, indicating galvanic action. On the pipes and grounding conductor close to the service entrance the readings were small and fluctuating, indicating stray electric-railway currents.

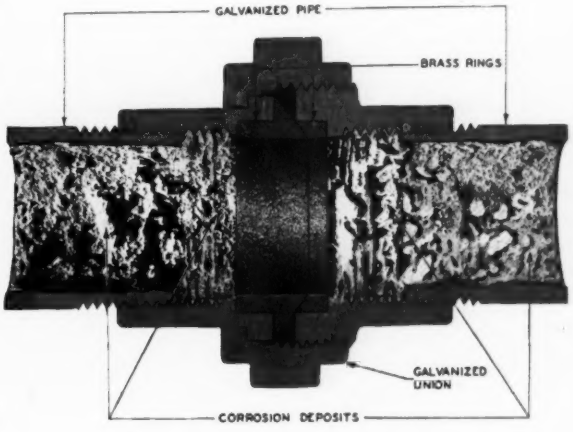
In the three remaining cases the complaints were of discoloration or other impairment of the quality of the water delivered through taps on customers' premises. Of these three cases one showed no electric current present on the pipes, another was cleared up by lime treatment of the water, and the third was remedied by reducing the temperature of the hot water to 140 deg.

Additional field investigations are to be made as cases are reported to the committee by water companies where troubles such as corrosion, impairment of water, sparking, or electrical shock are suspected as being caused by electrical grounding.

Field work is being supplemented by laboratory investigations of the fundamental electrochemical principles involved. It is believed that these will throw considerable light on the causes of the difficulties.

Laboratory tests on samples of metals simulating pipes have been made. These tests have indicated many factors that enter the problem of the effects of superimposed alternating current on galvanic-cell current, and further tests to determine the fundamentals involved are being undertaken.

The American Research Committee on Grounding, with a membership of organizations vitally concerned with the problem of grounding electric light and power circuits, was organized as the result of questions raised in the American Standards Association on the effect of electrical current flowing through water, gas, or drainage pipes used for grounding. It is operating under the joint auspices of the American Water Works Association and the Edison Electric Institute. H. S. Warren, Bell Telephone Laboratories, New York, is chairman of the committee.



Cross section of standard galvanized iron fitting with brass sealing ring showing corrosion of adjacent section of fitting and of iron pipe.

How a Uniform Marking System Identifies Valves and Fittings[1]

by

John J. Harman[2]

General Secretary, Manufacturers Standardization Society of the Valve and Fittings Industry

The Manufacturers Standardization Society of the Valve and Fittings Industry worked on a standard for marking valves and fittings from 1923 to 1934 before the first edition was completed. This standard marking system is now being tested in practice. Experience in its use resulted in a new edition in 1936, and an Addendum in 1938, to make necessary corrections and to include marking rules for ring joints.

After the standard has been given sufficient trial in practice to be sure it is satisfactory, it will be submitted to the American Standards Association for approval as an American Standard.—EDITOR.

THE uniform marking of valves and fittings to indicate clearly the essential information required to identify a particular product and insure its proper application in service is a matter of far-reaching importance to manufacturers and users alike. Unsatisfactory performance and positively dangerous operating conditions may result from inadequate marking which would permit the installation of valves and fittings unsuited for the service conditions to which they are applied. Safeguards to prevent such hazards are undoubtedly of primary interest to all who are in any way connected with piping work. For this reason the marking system given in the standard prepared by the Manufacturers Standardization Society of the Valve and Fittings Industry, MSS Standard Practice No. SP-25-1936, covering the MSS Standard Marking System for Valves, Fittings, Flanges, and Unions, is particularly valuable.

While the importance of uniform and adequate marking is readily apparent, there are comparatively few people who realize the amount of patient study and untiring effort that has been required to develop and put into effect this comprehensive marking system for valves and fittings, in order to make it applicable to the great variety of products it was necessary to cover. Two essential requirements were given careful study in the development of the standard—that the system must be sufficiently flexible to take care of future developments; and that at the same time it must be simple enough to be readily applied and easily understood.

The Manufacturers Standardization Society of the Valve and Fittings Industry started work on this project in 1923, but it was not until 1934 that the many controversial details of the proposed standard were adjusted so as to permit the adoption of the first edition of SP-25. Considerable satisfaction was felt at the time over its promulgation, as this marked the first tangible evidence of progress, but experience in the use of the standard soon indicated that it was not sufficiently elaborate for general application. It became necessary to correct the defects that developed, and a much more comprehensive edition of the standard was issued in 1936. And now in 1938, due to the introduction of new designs, it has become necessary to issue Addendum No. 1 covering standard mark-

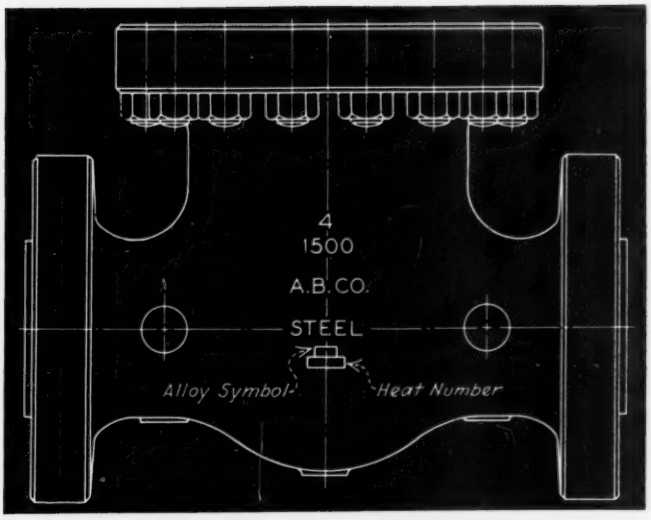
[1]From an article, "Uniform Marking of Valves and Fittings," published in *Heating, Piping and Air Conditioning*, July, 1938.

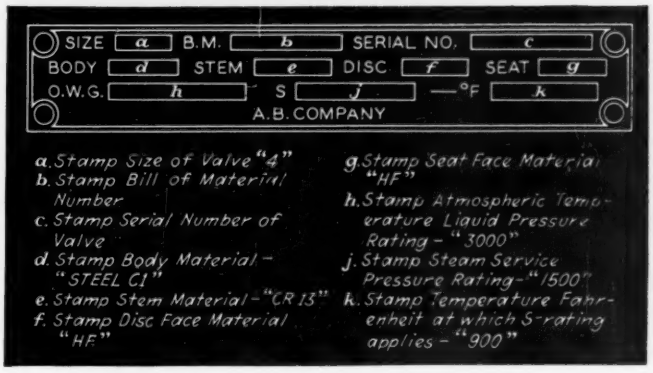
[2]Secretary, Sectional Committee on Standardization of Pipe Flanges and Fittings (B16) under the procedure of the American Standards Association.

ing rules for Ring Joints, which are coming into extensive use.

The standard in its present form consists of three parts. Section I covers scope, application, and general requirements; Section II consists of definite rules for marking, which are applicable to specific lines of products; and Section III is made up of 30 tables outlining the definite marking requirements for the most commonly used types of valves and fittings, in accordance with the rules set forth in Section II.

It is intended that the standard shall apply to all products that manufacturers recognize as regular patterns, but not to such valves as pop safety, relief, regulating, and other designs that require special markings to indicate the special service conditions for which the valve has been produced. It is recommended, however, that this marking system be used insofar as possible for special designs as well as for regular products.




SIZE a B.M. b SERIAL NO. c
BODY d STEM e DISC f SEAT g
O.W.G. h S j —°F k
A.B.COMPANY
a. Stamp Size of Valve "4"
b. Stamp Bill of Material Number
c. Stamp Serial Number of Valve
d. Stamp Body Material - "STEEL CI"
e. Stamp Stem Material - "CR 13"
f. Stamp Disc Face Material "HF"
g. Stamp Seat Face Material "HF"
h. Stamp Atmospheric Temperature Liquid Pressure Rating - "3000"
j. Stamp Steam Service Pressure Rating - "1500"
k. Stamp Temperature Fahrenheit at which S-rating applies - "900"

Diagrams showing typical body marking and typical identification plate for 4 in. alloy steel valve rated at 1500 lb per sq in. steam service pressure at a temperature of 900 F. Items a, b, c, and h shown on the identification plate are not mandatory, but are optional with the manufacturer, although the size marking (item a) must appear either on the valve body or the identification plate. All other markings shown on the identification plate are mandatory for a valve of this type. For a carbon steel valve, however, having a steam service rating of 1500 psi at 750 F, the temperature marking (item k) and the alloy steel symbol in item d are not required.

General Rules for Marking

With certain exceptions the standard requires that all products shall be marked with the manufacturer's name or trade mark, the pipe size of the valve or fitting, the service pressure for which the article is recommended, the temperature at which the designated service pressure applies, the class of service, such as steam, oil, water, gas, etc. (*see* Table I), and the material of which the article is made.

An important provision of the standard in connection with pressure marking is that unless especially requested or required by the purchaser, the inclusion in the marking of numerals indicating the maximum shell test pressure is prohibited. This provision is intended to eliminate the possibility of a test pressure marking being erroneously interpreted as a service pressure rating.

Mandatory marking to identify materials, although at a minimum, is sufficiently elaborate to prevent errors in application of the product to particular service conditions. As an example, all parts made of steel must be marked with the word "Steel" and heat numbers are required on all pressure containing steel castings. If no other designating mark occurs the part is assumed to be carbon steel. If of alloy steel, symbols from appropriate A.S.T.M. specifications are added which indicate whether the part is forged or cast and also show the type of alloy steel used.

With certain exceptions the standard requires also that valve trim materials must be identified in the marking. Steel valves which are regularly furnished with a variety of trim materials are a conspicuous example of product requiring trim material marking. This marking is required to be

TABLE 1
Symbols Signifying Class of Service[a]

A	to signify Air[b]
G	to signify Gas
L	to signify Liquid
O	to signify Oil
S	to signify Steam
W	to signify Water

[a]These symbols may be used in any order.
[b]The symbol for air was not included in SP-25-1936 but was added to the standard by Addendum No. 1.

TABLE 2
Valve Trim Symbols

Aluminum	*AL*
Alloy cast iron (i.e., "Ni-Resist")	*CIA*
Bronze	*B*
Carbon steel	*CS*
Cast iron	*CI*
Cobalt-chromium-tungsten alloy (hard surface)	*HF*
Copper-nickel-alloy (i.e., inverted "Monel")	*CU NI*
Integral seats	*INT*
Malleable iron	*MI*
Nickel-copper alloy (i.e., "Monel")	*NI CU*
Soft metal (i.e., lead, babbit, copper, etc.)	*SM*
Steel 13 chrome (i.e., stainless steel)	*CR 13*
Steel 18 chrome	*CR 18*
Steel 28 chrome	*CR 28*
Steel 18-8	*18 8*
Steel 8-18	*8 18*
Surface hardened steel (i.e., "Nitralloy")	*SH*

TABLE 3
Examples Showing Method of Applying Trim Marking

(1) Steel gate valve, 13 per cent chrome steel stem, cobalt-chromium-tungsten alloy disc face, 13 per cent chrome steel seat face.				
STEM	CR 13			CR 13
DISC	HF	or CR 13	HF	CR 13 or HF
SEAT	CR 13			CR 13
(2) "All-iron" globe valve, carbon steel stem, cast iron disc face, integral seat face.				
STEM	CS			CS
DISC	CI	or CS	CI	INT or CI
SEAT	INT			INT
(3) Steel swing check valve, nickel-copper-alloy disc face and seat face.				
DISC	NI CU			NI CU
SEAT	NI CU	or NI CU	NI CU	or NI CU

applied to identification plates securely attached to the valves. When marked in this way changes in the trim materials that may be made after the valve leaves the factory can be readily recorded by simply changing the identification plate.

Direct application of trim marking to the body of the valve is prohibited by the standard. The required trim material marking for gate, globe, angle and cross type valves consists of three symbols. The first indicates the material of the stem, the second the material of the disc face and the third the material of the seat face. For valves having no stem, such as check type valves, the trim marking consists only of two symbols. The first indicates the material of the disc face and the second the material of the seat face. A list of symbols is given in the standard to indicate the more commonly used types of valve trim (*see* Table 2), but these may be supplemented by manufacturers' individual code or trade designations, except that confusion with the standard symbols must be avoided. For specific examples of trim marking, see Table 3. It will be noted by Table 3 that several different arrangements of the symbols designating trim material are permitted by the standard.

TABLE 4
Thread Identification Marking[a]

(1) Nominal pipe, tubing or casing size.
(2) Outside diameter or upset diameter pipe, tubing or casing.
(3) Name of thread.
(4) Number of threads per inch.

Examples:

3 —3½	API	TBG	11½
4 —4½	API	TBG	10
3½—3½	API	DP	8
6⅝—7	DBX	CSG	10
6⅝—6⅝	API	CSG	10
4¾—5	API	UP	CSG 10
4 —4¾	API	UP	TBG 10

Note: TBG stands for Tubing
DP stands for Drill Pipe
CSG stands for Casing
UP stands for Upset
API stands for American Petroleum Institute
DBX stands for Diamond B Casing with 10 threads

[a]The special thread identification marking applies to tubing, upset tubing, casing and drill pipe threads.

Another marking requirement is that product which is threaded with other than American Standard Pipe Thread, American Petroleum Institute Line Pipe Thread, or Hose Thread shall be marked to indicate the type of thread (*see* Table 4).

Mandatory marking requirements are also provided in the standard to apply to valves and fittings made of one material and lined with another. Such products must carry the regular markings required by the standard, supplemented by additional markings that will indicate whether the product is partially or completely lined, and the material used for lining.

Alloy steel bolting material, when used, is required to be marked with symbols designated in A.S.T.M. specifications for bolting materials to identify the grade of steel. In order to facilitate proper assembly when ring joints are used, the standard also requires that both the grooved flanges and the ring joint gaskets must be marked with the letter "R" and the ring number, taken from American Standard B16e or A.P.I. Standard No. 5-G-3. Any additional markings that manufac-

turers may wish to use are also permitted, provided the markings are applied in such a manner as to avoid confusion with the markings required by the standard.

Important Exceptions to General Rules

Attention is called to the fact that in some cases it is not practicable or desirable to apply all of the comparatively elaborate markings outlined in the foregoing paragraphs. The primary purpose of the marking, of course, is definitely to identify the product and to insure its proper application in service. Certain exceptions to the general rules, therefore, are provided for in the standard. For instance, when the product is of such size or shape as will not permit all required markings, the standard provides that they may be omitted to the degree to which conditions require in the sequence of:

(1) Size.
(2) Thread identification.
(3) Valve trim identification.
(4) Temperature rating.
(5) Material—Steel Products: (*a*) Steel; (*b*) Melt Number. (*c*) Alloy symbol.
(6) Pressure.
(7) Manufacturer's name or trade mark.

Another exception is that "finished" non-ferrous products are excluded entirely from the mandatory marking requirements because the processes used to produce the finish preclude preservation of markings to a degree which will permit correct deciphering in all cases.

The standard also exempts the 150 lb line of malleable iron screwed fittings from a mandatory material marking because these fittings are readily distinguished from brass or bronze fittings by the difference in the color of the metal, from cast-iron fittings by the characteristic difference in the design of the fittings, and from steel fittings by the fact that all steel fittings must be marked with the word "Steel."

Malleable Iron Fittings Exempt

Malleable iron fittings are also exempted from a mandatory material marking, but other lines of malleable iron products are required to carry markings indicating that they are made from malleable iron. Following the same basic reasoning, cast iron fittings and valves, for all pressures, are exempted from the mandatory requirement of a material marking. Likewise, products made from brass or bronze are not required to have a material marking, as the general nature of the material is readily apparent. The standard does require, however, that all bronze products which are recommended for high temperature services, such as steam temperatures in excess of 550 F, must be marked with the numerals comprising the working temperature recommended by the manufacturer, followed by the letter "F" to indicate degrees Fahrenheit.

Another important exception to the customary marking is found in the case of steel drilling—through valves where the usual size marking is not necessary because the nominal valve size is covered by the thread identification marking.

Another modification of the general rules, referring particularly to the mandatory marking indicating the class of service, is that when the primary service pressure rating is for steam, and the steam pressure marking only is used, a service symbol is not required. However, when the steam service pressure marking is supplemented by service pressure markings for other classes of service, it is mandatory that each service pressure marking shall be supplemented by symbols identifying the class of service (*see* Table 1). It is required also that when the primary service pressure rating is for service other than steam, numerals comprising the pressure in lb per sq in. supplemented by one or more of the symbols shown in Table 1 must be used.

As in the cases of the class of service and material markings, the general rules for temperature

Six Technical Committees Work on Piping Standards

Six ASA technical committees are working on piping standards with seven organizations taking the leadership in the work. These committees, and their sponsor organizations, are:

Scheme for the Identification of Piping Systems (A13)—American Society of Mechanical Engineers; National Safety Council

Minimum Requirements for Plumbing and Standardization of Plumbing Equipment (A40)—American Society of Mechanical Engineers; Society of Sanitary Engineering

Pipe Thread (B2)—American Gas Association; American Society of Mechanical Engineers

Pipe Flanges and Fittings (B16)—American Society of Mechanical Engineers; Heating, Piping, and Air Conditioning Contractors National Association; Manufacturers Standardization Society of the Valve and Fittings Industry

Code for Pressure Piping (B31)—American Society of Mechanical Engineers

Standardization of Dimensions and Materials of Wrought-Iron and Wrought-Steel Pipe and Tubing (B36)—American Society of Mechanical Engineers; American Society for Testing Materials

markings are also subject to various exceptions, such as:

(*a*) Product bearing a primary service pressure rating which is recommended by the manufacturer for use at normal atmospheric temperatures need not be marked with a temperature rating.

(*b*) Carbon steel and alloy steel products[3] which are marked with a primary steam service pressure rating need not be marked with a temperature designation unless the temperatures recommended by the manufacturer are other than the following:

Steam service rating 150 psi . . . . . 500 F
Steam service rating over 150 psi . . . . . 750 F

(*c*) No temperature marking is mandatory on malleable iron and cast iron products unless the pressure marking is intended to apply to service other than steam; and even in that case no temperature marking is required unless the pressure marking is intended for temperatures higher than normal atmospheric.

(*d*) Special limitations of temperature marking are also provided for non-ferrous products and lubricated plug valves.

There are also several notable exceptions to the general rules, where in the interest of simplicity, valve trim markings are not required, among which are the following:

(*a*) Brass or bronze valves.

(*b*) Cast iron or malleable iron valves trimmed with bronze.

(*c*) Bar stock valves having trim material identical with the body material.

(*d*) Lubricated plug valves having plugs made of material identical with the body material.

The numerous exceptions to the general rules outlined in the foregoing paragraphs emphasize the fact that the development of SP-25 has not been an easy problem, but the widespread interest in the subject has stimulated perseverance in the effort to produce a standard marking system that would be generally acceptable to both producers and consumers. Convincing evidence of the widespread interest in this matter is found in the fact that a large supply of copies of SP-25-1936 have been purchased recently by the British Standards Institution, of London.

This standard was prepared with the active cooperation of the American Petroleum Institute through its special committee on the standardization of valves and fittings for pipe line and production use, division of production, and its committee on standardization of refinery equipment, division of refining. These A.P.I. committees have approved the standard for submission to the American Standards Association for adoption as an American Standard. The standard also has the approval of the National Association of Purchasing Agents, Inc. This organization early recognized the importance to all industry of standard marking systems and its national committee on uniform markings on valves and fittings has actively supported the development of SP-25. General acceptability of the standard is indicated by the fact that a number of American Standards and A.S.T.M. specifications now refer to SP-25 as the authority for marking requirements.

After a suitable trial period of actual service in industry, it is planned that SP-25, including any revisions or additions that may be found desirable, will be submitted to the American Standards Association for approval as an American Standard.

[3] EDITOR'S NOTE:—We are advised by the author of this article that in order to take full advantage of the new rating tables for alloy steel flanges and fittings which are now being incorporated in the American Standard for Steel Pipe Flanges and Flanged Fittings (B16e-1932), a proposed revision of SP-25 is being taken up for consideration. The proposed revision would provide that alloy steel products which are marked with a primary steam service pressure rating need not be marked with a temperature designation unless the temperatures recommended by the manufacturer are different from the ratings shown in Tables 5 and 6 of the proposed new edition of standard B16e. This new edition of B16e is now being completed by the sectional committee and it is expected that it will be submitted to the American Standards Association in the near future for approval.

A.S.T.M. Consistency Symposium Considers Standardization

In addition to a review of present-day practices, the Symposium of Consistency published by the American Society for Testing Materials includes a discussion of theoretical background and existing nomenclature. It also considers the possibilities of standardization and the advantage to be derived from the use of fundamental units of measurement. The symposium, a critical discussion on present-day practices in consistency measurements, includes nine technical papers with considerable discussion.

The papers cover a cross-section of engineering materials for which the measurement of consistency, plasticity, viscosity, and related properties is important. Materials discussed include flow properties of asphalts measured in absolute units, coal tar, petroleum products, and lubricants, rubber and rubber compounds, plastics, and cold flow of insulating materials.

Copies can be obtained from the American Society for Testing Materials, 260 S. Broad Street, Philadelphia, at 85 cents each.

30 American Standards For Pipe and Fittings

Thirty standards for pipe and pipe fittings have been approved by the American Standards Association as national standards, and others are now being prepared by six representative committees working under ASA procedure. The standards already approved are:

Scheme for the Identification of Piping Systems, American Recommended Practice (A13-1928) 50¢

Code for Pressure Piping, American Tentative Standard (B31.1-1935) $1.00

Pipe Thread, American Standard (B2-1919) out of print (under revision)

Cast-Iron Soil Pipe and Fittings, American Standard (A40.1-1935) 65¢

Brass Fittings for Flared Copper Tubes for Maximum Cold Water Service Pressure of 175 lb per sq in. (Gage), American Standard (A40.2-1936) 35¢

Cast Iron Pipe Flanges and Flanged Fittings, All Sizes for Maximum WSP of 125 lb per sq in. (Gage), American Standard (B16a-1928) out of print (under revision)

Cast Iron Pipe Flanges and Flanged Fittings, All Sizes for Maximum WSP of 250 lb per sq in. (Gage), American Standard (B16b-1928) 50¢

Cast Iron Pipe Flanges and Flanged Fittings for Maximum Non-Shock Working Hydraulic Pressure of 800 lb per sq in. (Gage), at Ordinary Air Temperatures, American Standard (B16b1-1931) 35¢

Cast Iron Pipe Flanges and Flanged Fittings, All Sizes for Maximum WSP of 25 lb per sq in. (Gage), American Tentative Standard (B16b2-1931) 40¢

Malleable Iron Screwed Fittings for Maximum WSP of 150 lb per sq in. (Gage), American Tentative Standard (B16c-1927) 40¢

Cast Iron Screwed Fittings for Maximum WSP of 125 and 250 lb per sq in. (Gage), American Tentative Standard (B16d-1927) 35¢

Steel Flanged Fittings and Companion Flanges, American Standard (B16e-1932) under revision 65¢

Addendum to American Standard Steel Flanged Fittings and Companion Flanges, American Standard (B16e1-1935) gratis

Pipe Plugs of Cast Iron, Malleable Iron, Cast Steel, or Forged Steel, American Standard (B16e2-1936) 35¢

Cast Iron Long Turn Sprinkler Fittings (Screwed and Flanged), American Standard (B16g-1929) 50¢

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Specifications for Welded and Seamless Steel Pipe, American Standard (B36.1-1936) ASTM A53-36 25¢

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Specifications for Electric-Fusion-Welded Steel Pipe (Sizes 30 in. and Over), American Standard (B36.4-1936) ASTM A134-36 25¢

Specifications for Electric-Resistance-Welded Steel Pipe, American Standard (B36.5-1935) ASTM A135-34 25¢

Specifications for Forge-Welded Steel Pipe, American Standard (B36.6-1935) ASTM A136-34 25¢

Specifications for Lock-Bar Steel Pipe, American Standard (B36.7-1935) ASTM A137-34 25¢

Specifications for Riveted Steel and Wrought-Iron Pipe, American Standard (B36.8-1935) ASTM A138-34 25¢

Specifications for Electric-Fusion-Welded Steel Pipe (Sizes 8 in. to but not including 30 in.), American Standard (B36.9-1936) ASTM A139-36 25¢

Wrought-Iron and Wrought-Steel Pipe, American Tentative Standard (B36.10-1935) 50¢

Specifications for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses, American Standard (G8.7-1937) ASTM A120-36 25¢

Specifications for Carbon-Steel Castings for Valves, Flanges and Fittings for High-Temperature Service, American Standard (G17.1-1936) ASTM A95-36 25¢

Specifications for Alloy-Steel Bolting Material for High-Temperature Service, American Standard (G17.2-1934) ASTM A96-33 25¢

Specifications for Forged or Rolled Steel Pipe Flanges for High-Temperature Service, American Standard (G17.3-1936) ASTM A105-36 25¢

A.S.T.M. Symposium Analyzes Coal Tests

A Symposium which discusses in detail the meaning of the results from tests of coal was published recently by the American Society for Testing Materials. Six extensive technical papers, with discussion by technologists, cover:

Interpretation of Laboratory Coal Tests—Proximate Analysis and Calorific Value

Significance to the Consumer of Sulfur in Coal

Significance of Ash Softening Temperature and Ash Composition in the Utilization of Coal

Laboratory Tests Relating to Caking, Plastic, Gas- and Coke-Making Properties of Bituminous Coals

Significance of Friability and Size Stability Tests on Coal

Pulverizer Performance as Affected by Grindability of Coal and Other Factors

In addition to the viewpoints of the leading technologists, the publication also gives a large number of bibliographic references.

Copies, bound in heavy paper cover, may be obtained at $1.00 each from the American Society for Testing Materials, 260 S. Broad Street, Philadelphia.

ASA Committee Studies Standards For Uniform Auto Inspection

THE relation of the states' inspection of motor vehicles to the American Standards Association's project on inspection of motor vehicles was brought out at a meeting of the Commercial Vehicle Section of the Greater New York Safety Council and the Metropolitan Chapter of the American Society of Safety Engineers, June 2nd.

Standards to form the basis for uniform inspection requirements are now being prepared by the Sectional Committee on Inspection of Motor Vehicles under the procedure of the American Standards Association. Brakes, lights, accessories, steering, tires and wheel alignment are being studied by subcommittees of this main committee. When its recommendations are completed, the standards the committee proposes will, it is expected, be used by states which now require periodical inspection of motor vehicles.

James J. Shanley, chief of the Inspection Department of the State of New Jersey, who was the principal speaker at the June 2nd meeting, said that of the 699,012 cars that finally passed inspection, 255,665 passed on the first examination, 443,347 on re-examination. Some 466,519 cars were rejected on the first examination, 19,625 on the second examination. The largest number of rejections was due to trouble with headlights, 361,953 of the total number being traced to this cause. Brakes were second, with a total of 175,063 rejections.

Mr. Shanley reported that the inspection of headlights has resulted in a definite improvement in lighting conditions for night driving.

The first four months of this year, a period covered by the inspections, showed 29 per cent fewer motor vehicle fatalities than for the same period last year when the inspection had not been made, Mr. Shanley said.

Four subcommittees of the Sectional Committee on Inspection of Motor Vehicles are now actively at work. These are:

Lighting Systems, W. F. Little, Electrical Testing Laboratories, chairman;

Tires and Wheel Alignment, William Heinrich, National Conservation Bureau, chairman;

Control (including brake systems), A. J. Schamehorn, Society of Automotive Engineers, chairman;

Accessories and Miscellaneous, Dave Fenner, Automobile Manufacturers Association, chairman.

The committee is working under the leadership of the American Association of Motor Vehicle Administrators and the National Conservation Bureau. Sidney J. Williams of the National Safety Council is chairman; Dr. Miller McClintock, Bureau of Street Traffic Research of Yale University, and Arthur Magee, American Association of Motor Vehicle Administrators, are vice-chairmen. Harold F. Hammond, Institute of Traffic Engineers, is secretary.

Inspection Improves Cars' Condition

Improvement in the mechanical condition of cars always follows the introduction of compulsory inspection, although little or no uniformity exists at present in inspection methods, the Bureau of Public Roads reports following a survey of motor-vehicle traffic conditions.

Less than a third of the states now require vehicular inspection, the Bureau found. Some states have official inspection forces, but more depend on licensed garages as inspection stations. Several states require inspection as a condition of renewing licenses. In others the highway patrols have power to rule off the roads any vehicle that does not display the windshield sticker supplied by inspectors.

Improvement in vehicles inspected is progressive, the Bureau found. As one inspection follows another, inspectors say that there are fewer and fewer cars that fall short of the standard required.

Heat Exchange Institute Issues Standards

Standards of the Heat Exchange Institute's Steam Jet Ejector and Vacuum Cooling Section, including provisions for steam jet ejectors, test code, and for jet vacuum refrigeration equipment were published recently by the Heat Exchange Institute. Copies are available from C. H. Rohrbach, secretary, 90 West Street, New York, at $1.00 each.

Uniform Factory Inspection Is Purpose of New Manual

An *Inspection Manual,* outlining principles for inspectors to carry out safety and health inspection, and enforcement of hour, wage, child labor, and industrial home-work legislation, and giving the various inspection methods found effective in the several States, has just been issued by the Division of Labor Standards, U. S. Department of Labor. The primary purpose of the Manual, the Division announces, is to help State labor departments prepare their own handbooks, adapted to their own laws, administrative organizations, and policies.

The role of the Inspector, administrative instructions and general policies and practices, interpretations and application of labor laws, employment records and posters, inspection procedure, evidence for prosecution purposes, and suggested forms, are discussed.

"The need for clean and safe working places and for the protection of standards of employment is basically the same for all workers, regardless of the State in which they happen to work," the Division of Labor Standards says in its Introduction to the *Manual.* "Yet there is a definite variation from State to State in the scope and standard of the laws which provide protection to the worker. Some cover all establishments; others apply only to certain industries and to plants employing more than a certain number of workers; some apply to women only; others to all employees.

"There is also great variation in the methods of enforcement of existing laws. With a growing uniformity in the basic labor laws and with industry constantly extending beyond State borders, there is clearly a need for agreement among the States as to the most effective ways of enforcing labor laws and for bringing about the acceptance of higher standards for the protection of workers. Fortunately the increasing cooperation between State labor departments and between State departments and the Federal Department of Labor has helped to establish standards and to define those practices and techniques which have demonstrated their effectiveness in bringing about compliance."

The Division of Labor Standards is ready to give more detailed information on accepted inspection procedures and will be glad to assist States in adapting this Manual or any of its parts to fit the particular needs of individual States, it announces.

Copies of the *Inspection Manual,* Bulletin Number 20, are available from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 50 cents each.

Bemis Industries Ask ASA For Modular Design Standards

A request that the American Standards Association organize a sectional committee to develop modular standards for building materials was received recently by the ASA from the Bemis Industries, Inc.

Studies of the advantages of modular standards, development of a suitable module which would effect the least number of dimensional dislocations in the building industry, and development of recommendations for standard dimensions in terms of the commonly adopted module and the requirements of modular design would be included in the work of such a committee.

In submitting its request the Bemis Industries explained that it has been engaged for many years in the promotion of more economical building construction that will permit the development of cheaper housing. The late A. F. Bemis, founder of Bemis Industries, was a pioneer in developments in the housing field. Before his death in 1936, Mr. Bemis was one of several active proponents of modular standards. His investigations led to application for and subsequent granting of several patents relating to the cubicle modular method of building construction. Bemis Industries is prepared to make the patents available along lines that would properly protect the public interest, the request said.

A general conference will be held by the American Standards Association in New York on September 20th to consider what recommendations to make to the ASA Standards Council on the proposed project.

British Standards for Coal Available from ASA

An unusual number of requests have been received by the American Standards Association for a new British Standard on "Sampling and Analysis of Coal and Coke for Performance and Efficiency Tests on Industrial Plant", B.B.S. 735. This standard, as well as other approved British Standards, may be ordered from the ASA office.

The British Standards for Coal include:

Analysis of Coal Ash, B.S. 686
Determination of the Agglutinating Value of Coal, B.S. 705
Sampling of Coal, B.S. 763
Sampling of Large and Run-on-Mine Coal, B.S. 502
Sampling of Small Coal (Report on), B.S. 403
Ultimate Analysis of Coal, B.S. 687

National Safety Congress Holds Silver Jubilee

The Silver Jubilee Safety Congress will celebrate the National Safety Council's 25 years of accident prevention work October 10-14, 1938, at the Stevens Hotel, Chicago.

One hundred twenty-five sessions will consider the various safety problems on which the Congress is working today, including prevention of accidents and disease in industry, on the highway, and in the home. Child education also receives its share of attention.

Sessions which may have a special interest for members of the American Standards Association include those on dusts, fumes, and gases; occupational disease; construction; falls of workers, which includes the question of walkway surfaces; industrial accident investigations, industrial explosion hazards; mining; paper and pulp; petroleum; power press; refrigeration; street and highway traffic; and commercial vehicles.

Since its organization in 1913 with 14 members, the Council's membership has grown to include some 5,000 organizations. In that time the National Safety Council points out 285,000 human lives have been saved from accidental death. The Council works through the distribution of safety posters, calendars, and news letters, through its magazines, and in addition makes special surveys for cities and industrial organizations. City traffic surveys, studies of new industrial hazards, analyses of occupational diseases are some of the types of studies the Council has carried out.

The National Safety Council is represented on the Standards Council of the American Standards Association by W. Dean Keefer, with C. B. Boulet as his alternate. The Council is also a member of the Building Code Correlating Committee, the Mining Standardization Correlating Committee, and the Safety Code Correlating Committee. It has administrative responsibility for 11 of the committees working on standards under the procedure of the American Standards Association, and is represented on 36 others.

American Standard Coal Classification Adopted by Canadian Committee

The Canadian Associate Committee on Coal Classification and Analysis, organized under the auspices of the National Research Council of Canada and the Dominion Department of Mines, has adopted the American Standards for Classification of Coal for use in connection with Canadian coals. Copies of a report embodying the specifications have been circulated through the committee to the managers of all Canadian collieries having a yearly production of over 5,000 tons, to mine inspectors, and to the members of the associate committee. An explanatory bulletin is at present being prepared for distribution to the principal Canadian users of coal and to trade journals to show the application of the new systems of classification and promote their general adoption in Canada.

The Associate Committee on Coal Classification and Analysis was organized in 1928 to cooperate with the Sectional Committee on the Classification of Coal. This committee is working under the procedure of the American Standards Association with the American Society for Testing Materials taking the administrative leadership in the work.

Results of research on the classification of coal carried out in the Fuel Research Laboratories of the Dominion Department of Mines and the laboratories of the University of Alberta were considered by the sectional committee in preparing the standards, and the Canadian organizations were represented on the committee.

Copies of the standards, Classification of Coals by Rank (M20.1-1937; A.S.T.M. D 388-37) and Classification of Coals by Grade (M20.2-1937; A.S.T.M. D 389-37) are available from the American Standards Association at 25 cents each.

New Series of Papers Will Describe National Bureau of Standards' Research on Building Materials

The first paper in a new series of publications, "Reports on Building Materials and Structures," was released by the National Bureau of Standards recently. The paper explains a new approach to the problem of applying technical research in the building industry, says the National Bureau of Standards in its announcement. It tells of the objectives, procedure, and scope of the Bureau's research on building materials and structures for use in low-cost housing. The technical aspects of the Bureau's work, with test procedures, and results, will be given in later reports in the series.

Copies of the first report may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 10 cents each.

What Name For Heat Value?

A.S.T.M. Committee Asks Help in Making Decision

A friendly controversy now raging in the American Society for Testing Materials' Committee E-8 on Nomenclature and Definitions requires additional opinions on the subject before a solution can be reached. Shall the term "calorific value" be used to indicate the heating value of a fuel, or shall some other term, such as "heat of combustion," be accepted as the standard?

A subcommittee has been assigned to the task of selecting the standard, and has found that a number of different terms are now in use:

calorific value, because a calorimeter is used in determining the heating value of a fuel
Btu value, because results have frequently been reported in terms of the British thermal unit
thermal value
heating value

The subcommittee is inclined toward the term "calorific value," it is reported in an editorial in the *A.S.T.M. Bulletin*, August, because of its wide acceptance internationally as well as nationally. The British Standards Institution has adopted "calorific value." It is also similar to the French "pouvoir calorifique," and to the German "heizwert."

The opinion of the subcommittee is, however, divided, several members favoring the term "heat of combustion" as being more accurate. This point of view is expressed by one of the members of the subcommittee:

"While it is true that terminology may not be of prime importance and it is more important to be consistent than to be correct, I feel still that the subject of heat of combustion *versus* calorific value is worthy of further thought. The mere fact that calorific value appears to have somewhat the advantage in present usage is not a particularly good reason why it should be adopted in preference to a wording which is possibly in almost as common use and which is distinctly superior for the purpose.

"While 'calorific value,' 'pouvoir calorifique,' and 'heizwert' are all parallel, they quite distinctly reflect the attitude of the mind before the thermal chemical problems were as well understood as they are at present. Undoubtedly the object of experiments on heats of combustion was to determine the 'calorific power' or heating effect of fuels. The thing which is actually measured is simply the 'heat of combustion.' Whatever other elements come into the problem are not subject to measurement. It seems therefore quite clear that we shall be on a much better logical basis in using a term which defines quite closely the thing which we actually measure; *i.e.*, the heat of combustion as such.

"Considering all the phases of the problem, it seems to me that the only valid argument for the use of calorific value is its apparent greater popularity at the present time. Over against that, the term heat of combustion is not only more logical and represents more accurately the thing which is measured, but is also a simpler term to use and more readily understood by all of those who may be concerned with it."

Shall the term "calorific value" be standardized? Or shall one of the terms "thermal value," "heat of combustion or heat value," or, as has been suggested, "calorific value (heat of combustion)" be used?

Any one having a definite opinion on this question is asked to write to H. C. Porter, chairman of the Subcommittee on Definitions of Net and Gross Calorific Values of Fuels, care of the American Society for Testing Materials, 260 South Broad Street, Philadelphia.

Radio Receiving Appliances Standard Now Available

The revised American Standard for Power-Operated Radio Receiving Appliances, extending the safety requirements which originally applied only to electrically operated radios to other non-commercial sound equipment such as inter-communicating systems, record players, and similar devices, has now been published. The revised standard was submitted to the American Standards Association by Underwriters' Laboratories, sponsor for the project, and approved by the ASA early this year.

Copies of the standard (C65-1938) are available from the ASA office at 25 cents each.

Canadian Association Issues Cable Standard

A tentative specification for the Construction and Test of Non-Metallic Sheathed Cable, C.E.S.A. C 22.2-No. 48-1938, has been issued by the Canadian Engineering Standards Association. The specification is No. 48 of a series of Approval Specifications being issued by the Association under the Canadian Electrical Code. The specifications outline conditions which must be met to secure laboratory approval for the sale and use of electrical equipment in Canada.

Copies of the standard are available from the Canadian Engineering Standards Association, Ottawa, Ontario, at 50 cents each.

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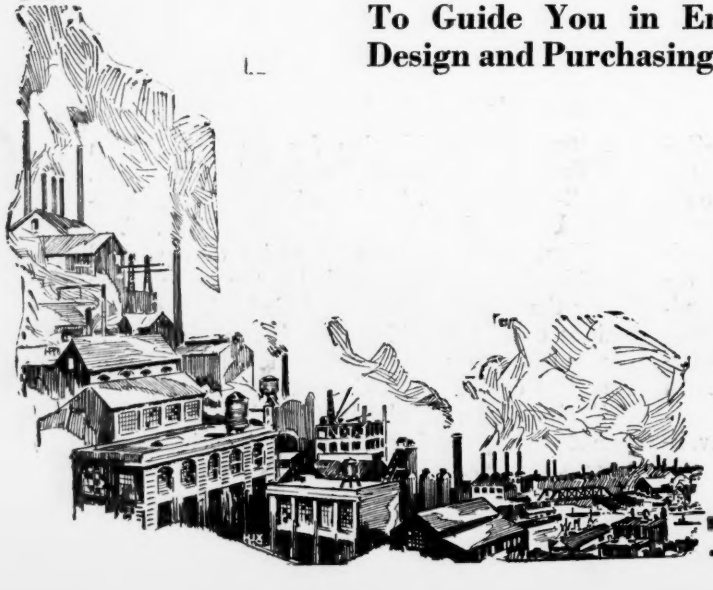

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